Literature Review of Rural Water Fluoridation Cessation

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Abstract

A literature review was performed between September 2018 and November 2018 to determine the effects of community water fluoridation cessation in rural communities, namely in Ida Grove, Iowa. Eleven articles were selected using inclusion and exclusion parameters, analyzed by the researchers, and summarized. Results of the literature review highlighted the benefits of fluoridation, which outweighed the possible risks. A plan of action was set out by the researchers to best promote optimal fluoridation in rural communities.

Keywords: Evidence-based practice, fluoridation, cessation, caries, prevention community, rural

Introduction

Fluoridation of drinking water has been regarded an essential part of preventing dental caries in a wide-spread population. Northwestern College was approached by Dawn Erickson, a dental hygienist and I-smile coordinator, to put together a research-based presentation for Ida Grove's city council members. In recent years, communities throughout Iowa have increasingly ceased artificially adding fluoride to the community's water supply due to an increase in cost of fluoridation or outdated water tanks that need replaced (Fluoride Action Network | Iowa, n.d.). Ida Grove recently voted for a cessation of fluoridation of the town's water sources.

Methods

A comprehensive literature review was conducted using articles from March 2010 to October 2018. Databases used include CINAHL, UpToDate, and Pubmed. The keywords fluoride, cessation, caries, and prevention yielded sixteen articles in CINAHL and one from UpToDate.
Six articles were discarded from CINAHL because they were not relevant to the project. These included articles which focused on oral and systemic health but not fluoridation and dental hygiene changes if fluoride was stopped. Multiple articles referenced other research so the researchers condensed the number of articles. Eleven articles were pertinent based on the research and are included in the literature review. These articles met the inclusion criteria of being in smaller communities, and relating to community water fluoridation cessation or dental caries incidence. The Johns Hopkins appraisal system (Dang & Dearholt, 2017) method was used to appraise the level and quality of evidence of the literature.

Results

After reviewing these articles, the researchers concluded that although water fluoridation is beneficial in preventing cavities, it is not always necessary and may even cause issues. The issue of dental fluorosis is a prevalent condition that can be caused by excessive ingestion of fluoride.

Studies have also proven that water fluoridation is not the only effective strategy to prevent dental caries. A number of alternative interventions have shown a decrease in the number of dental caries in children and adolescents, such as supervised toothbrushing, an approach including the mother, slow-release fluoride devices, and fluoride gel application (Skeie & Klock, 2018). However, these interventions focused on nutrition, education, and other fluoride supplementation which is as easily utilized or wide-spread as fluoride distributed through community water sources.

The majority of the articles reviewed did support fluoridation. Fluoridated water is one of the only ways to get systemic fluoride. Communities benefit from fluoride addition to the water system because the intake of fluoride is passive, and doesn't need to be calculated for each individual. Community based interventions are hard to implement and reach the entire population, so community water fluoridation is the most assured way to get people fluoride (Slade, Sanders, Grider & Maas, 2017). Community water fluoridation is a small way to prevent tooth decay that leads to much greater issues.

Gaps

Rural communities have different demographics and needs than urban populations and often present with an increased number of barriers, such as: access to care, transportation, cost, education, and availability. While this takes into account some of the variables affecting the results of the studies, it still raises questions.
Another variable that could affect the results is a compounding of factors. Some communities have access to fluoride rinses, fluoride varnish, and fluoride toothpaste, and each of these affect the results of dental caries as well. This leads to participants that are unsure of how much fluoride they receive when they self-report fluoride intake, leading to inaccurate reporting.

Conclusion

Fluoride is an important mineral in the prevention of dental caries. The literature review identified multiple ways to effectively deliver fluoride to rural communities. However, it was found that fluoridating the water system is the most efficient way to ensure access to fluoride for all community members. The researchers hope that this intervention will be implemented in the Ida Grove community. In addition to this, a record of the number of dental caries and fluoride level in the water be kept in order to ensure the proper prevention techniques. By doing this the community members will have easy access to fluoride and ultimately few dental caries.

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